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CURRENT LITERATURE

BOOK REVIEWS

Anisophylly

A monograph on this subject has been prepared by FIGDOR,[1] *privat-docent* in plant physiology in the University of Vienna. It is inspired by WIESNER, the distinguished physiologist of that university, and is dedicated to him. Naturally enough it is dominated by his views, and is interspersed with quotations from his writings. FIGDOR has gathered together what is at present known regarding anisophylly and has presented (critically, he says) the subject from both the morphological and the physiological point of view. In space, at least, the former predominates; and it must be confessed that the physiology is too obscure yet to be very satisfactory.

In the first section (36 pp.) the author defines the term, states the history of the phenomenon, and describes, as various sorts, incomplete, exorbitant, complete, lateral, habital, secondary, and false anisophylly. The second section (67 pp.) describes all the cases of anisophylly observed, in the systematic order from lycopods to composites, including cases of anisocotyly. The third section (55 pp.) discusses briefly the branching and symmetry of anisophyllous plants. The fourth and most interesting section (55 pp.) treats the causes of anisophylly—light, gravity, precipitation, nutrition, transpiration, exotrophy, and correlations. This fourth section would have been much shorter had FIGDOR discussed only causation; he intends to enumerate experimental work on all recorded cases, including new observations of his own. He has overlooked, however, the beautiful demonstration of DORETY[2] that gravity is the cause of anisocotyly in Ceratozomia; nor among the anisophyllous gymnosperms does he mention this and other cases in cycads.

The general conclusion is that anisophylly, which is very much more general than is commonly thought, cannot be said to be due in nature directly to the specific single causes to which experiments often point; but rather to the complex of factors, external and internal, which act on the primordia of the leaves. Primarily, therefore, the position of these is important, and that is conditioned by the orientation of the axes which bear them, with all its complex causation. But anisophylly may be in part phylogenetic, as well as ontogenetic; and here we meet factors of whose value we are ignorant. That ignorance needs emphasis. To say—"anisophylly is to be looked upon as a special case of anisomorphy, by which we understand, with WIESNER who proposed this term, that fundamental property of living substance in consequence of which the different organs (in our case the foliage leaves) have the power, each according to its position toward the horizontal or toward the parent axis, to assume different typical forms"—is merely to cloak ignorance with pedantry.—C. R. B.

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[1] FIGDOR, W., Die Erscheinung der Anisophyllie: eine morphologisch-physiologische Studie. 8vo. pp. viii+175. *figs. 23. pls. 7.* Franz Deuticke: Leipzig und Wien. 1909.

[2] DORETY, HELEN A., The seedling of Ceratozamia. BOT. GAZETTE **46**:305. 1908.

Desert vegetation

A very fitting celebration of the fifth anniversary of the establishment of the Desert Laboratory was the publication of a treatise on North American deserts by Dr. MACDOUGAL, the director of the department of botanical research of the Carnegie Institution.[3] Had there been any doubt concerning the wisdom of establishing the Desert Laboratory, it must have been long ago dispelled by the number of valuable contributions emanating from Tucson. The contribution here considered includes some of the matter that made up the body of the first report on our desert region by COVILLE and MACDOUGAL in 1903 (Publication 6), but the great amount of new material, based on subsequent explorations and on the investigations at Tucson, made imperative the publication of a general treatise of this sort. An account is given first of the earlier investigations of the institution and the development of the department of botanical research, especial attention being directed to problems of long continuance, such as the study of the revegetation of the Salton Basin and experiments on acclimatization. Nearly half of the work is devoted to a general account of the various desert regions of North America, including the various Mexican deserts, the northern sage-brush deserts, the Mohave desert and Death Valley, the Sonoran and Colorado deserts. Then follows a sketch of the geological features of the region about Tucson, by Professor W. P. BLAKE, territorial geologist of Arizona; herein is contained an account of the soils, including the *caliche*, an interesting calcareous formation arising through deposition from waters percolating upward. An interesting sketch is given of the seasonal changes in the aspect of the vegetation about Tucson. The early winter rains stimulate the development of a number of winter perennials and annuals. In the spring and early summer the aspect is controlled by more xerophytic spinose and succulent forms, notably the cacti. The humid midsummer, like the winter, is characterized by a number of forms stimulated to development by the greater moisture. The treatise closes with a consideration of temperatures of plants in the desert (it being suggested that the great difference between air and soil temperatures is likely to be of significance), the water relations of desert plants, soil relations of desert plants, conditions contributory to deserts, and some general remarks on the formation and extent of deserts and the influence of the desert on life. This treatise will be a *sine qua non* for all ecological workers, since it brings together what is known concerning our deserts, taking

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[3] MACDOUGAL, D. T., Botanical features of North American deserts. Carnegie Institution of Washington, Publication 99. 1908.